nature

What will Eureka discover?

West European governments are warming to the French proposal for a combined venture in high technology. The motives are political, but the risks are high.

THE President of France, M. François Mitterrand, must by now be thoroughly exasperated by his European counterparts. Throughout the five years of his presidency, M. Mitterrand has been preaching the need for European collaboration in high technology. Every summit meeting of the heads of the industrialized nations has been treated to a homily on the subject, and has been met with a blend of incomprehension and scepticism. Almost as if to humour the French government, the others agreed four years ago to mount several attempts at coordination in specific fields, providing a frisson of panic for officials in advance of succeeding summit meetings, but which have not yet produced much of substance. So why should M. Mitterrand have expected more from this year's summit, at Bonn? Indeed, because the proposed collaborative programme, called Eureka, had been advertised in advance as an alternative to collaboration by West European governments in the US programme of research on ballistic missile defences, otherwise known as the Strategic Defense Initiative (SDI) or "star wars", he had every reason to expect another rebuff. That, indeed, is what happened at Bonn, but since then there has emerged a fondness for the brave concept of Eureka that is only partly diminished by the general ignorance of what Eureka is supposed to be, how it is to be organized and what it may accomplish. For the time being, the working principle seems to be that a good idea should not be crabbed simply because it is vague. More generously to all concerned, even professionally pragmatic governments such as the British now seem to be willing to consider what Eureka might have to offer (which has surprised the French).

Eureka

For fear that Eureka may get out of hand, it is important to be clear that government's motives are at best mixed. The idea of foreign collaboration in the SDI research programme seems to have cropped up first during the British prime minister's visit to Washington last December, and to have been a British suggestion whose implications were not fully appreciated at the time. Now, the US government seems to value collaboration for political reasons: governments that agree to collaborate on the research are likely to be stauncher allies in resisting the Soviet argument that even the research programme is an abomination (which it is not). Governments (Britain and West Germany, for example) at first attracted to collaboration saw two advantages: the opportunity to learn some high technology at no direct cost and the opportunity to influence the political decision that may eventually have to be made about deployment. They have since been given pause by the more careful calculation that legal difficulties would restrict the technical benefits they might hope to win and that junior partners in such a gigantic enterprise might in the end have very little influence. The French government, traditionally suspicious of US influence in Western Europe, is consistent in its unwillingness to collaborate. Politically, the interested governments should set their faces firmly against collaboration in SDI unless they can win terms that will assure their independence in the strategic arguments that must lie ahead. The more immediate question is whether Eureka is in any way the alternative it purports to be.

Eureka, essentially a French conception, is to some extent an exercise in continental (European) chauvinism. It is firmly in the tradition of previous French technological initiatives leading to the Concorde (an uneconomic supersonic passenger aircraft), the European Airbus (a range of successful commercial aircraft), the Ariane satellite launcher (probably a success) and Superphénix (a prototype fast reactor, still unproven). Although many of these and other projects have been (or have seemed) worthwhile in themselves, French enthusiasm for them has in part derived from the wish to narrow what used to be called the technology gap between the United States and Europe (not to mention France). It is also worth remembering that some projects with this objective, such as the plan in the 1970s to beat off the US computer invasion of France, have been costly failures.

Solutions

Successful or otherwise, however, these projects have in common the circumstance that, from the point of view of Western Europe as a whole, they are second-bests. If the European Communities were not functioning as an efficient common market, and in the process generating the wealth of which Europe is potentially capable of generating, the need for the artificial definition of projects that will increase industrial company spending on research and development would have long since faded away. Instead, European companies would be spending from their own resources on research and development on a scale commensurate with that of their rivals in the United States and Japan — and the pace of innovation would presumably be enhanced commensurately. Throwing public money at joint projects must therefore be counted a stop-gap expedient for encouraging industrial development in Europe. Governments will have to worry less when there is a common market, but this will come about only when the same governments abandon their restraints on European competition, especially their failure to follow the principle that public purchases of goods and services should be open to competition. And for the time being, even (or especially) in France, national chauvinism takes precedence over European chauvinism.

Throwing money at Eureka, at least while the project is as ill-defined as at present, could be worse than a mere waste of money. As so far described, the essential chacteristics of Eureka are that it should be a big project and that it should include the principal components of the SDI programme — information processing, high-powered lasers, particle beam technology, artifical intelligence and so on. For the time being, Eureka is a rag-bag of technology looking for a goal. No doubt more tangible objectives will emerge in the next few weeks. But as there is no reason to expect these to be related to market needs of any kind, the obvious risk is that Eureka will be a recipe for diverting

Biological manuscripts

Miranda Robertson, Biological Sciences Editor of *Nature*, is now based in the Washington office of *Nature*. Manuscripts offered for publication may be sent, as at present, to either the London or the Washington office; with the benefit of good communications, the speed with which manuscripts are dealt will be independent of the place at which they are received. But authors are asked please in future to send **four copies of manuscripts** intended for publication (one for each office and two for referees).

European research efforts from the more realistic goals that European companies have already set for themselves. Nobody will deny that in the course of such a programme of technological development, European technology would acquire new skills. European politicians are fond of insisting that "science for its own sake" is a waste of resources, which is debatable; what they forget is that technology, however marvellous, which is not harnessed to practical objectives has literally no purpose.

The lessons for the West European governments lately attracted by Eureka are therefore plain. Their first objective should be to sweep away the restraints on movement and competition which at present make European technology less effective than it might be. Second, they should be prepared to back with public money only those projects emerging from the discussion of Eureka that seem likely to be commercially successful as well as technically challenging. Third, they should persuade each other that technological chauvinism is not a game worth playing for its own sake, but that it may even divert scarce skill for more useful tasks. Finally, they should acknowledge among themselves (and tell their voters as much) that the technology gap, although not necessarily here to stay, cannot by its nature be quickly bridged. Impatience is a dangerous trap. □

Fraud prevention

Only colleagues can judge the value and authenticity of a person's work.

THERE is much in the belief that the pressure on people to publish research articles is part of the explanation for the cases of fraud in science that have become notorious in the past few years, but too much attention should not be paid to the suggestions from Los Angeles last week (page 447) that journals could do much to help by, for example, stamping out the tendency towards the multiple publication of the same data. Quite apart from the practical difficulties (identical manuscripts simultaneously submitted, for example), better regulation at this stage of the publication process amounts merely to the remedy of symptoms, not the underlying disease. In any case, if repeated publication helps the process of communication, by what test is that by itself a crime? Far better that reforms should aim at the abatement of the pressure to publish.

How does the pressure arise? Now that young people's promotion prospects in academic life are substantially determined by their record in research, it is natural to look for fraudsters among the rising stars. And this has partly been confirmed. But why, then, have the most conspicuous cases of fraud apparently arisen at some of the most distinguished laboratories? Perhaps work done in relative obscurity is scrutinized less carefully, while it is also possible that the pressure to seem to succeed is all the greater the more success there is about. But a further disturbing possibility suggested by last week's discussion in Los Angeles is that there may be a symbiotic relationship between those who advance their reputations by fraud and much more senior people whose reputations are apparently established. For however replete a person's resume may be with research papers, his present influence may depend to a large extent on being thought still active in research. Indeed, the success of a department or a whole school in winning research funds from outside may depend on its head's reputation as one who still beavers away in the laboratory.

In the circumstances, it is no great surprise that great men have been vulnerable to younger fraudsters. Sadly, these relationships are often indistinguishable from those between truly great men and younger talented protégés. The remedy is not easily found, for one of its components would have to be a mutual recognition by the scientific community and those among its leaders who have become inactive that it is still possible for an established scientist to run a creative laboratory even when his direct contribution to the work is small. Then, only close colleagues would be in a position to distinguish wheat from chaff — which, in any case, is the present state of affairs. □

Educational yardsti

The British government should not att measure institutional efficiency.

THE British government's empty discussion paper on of British higher education (see *Nature* 23 May, predictably been condemned by academics and the org which represent them, but it is unusual that the chairm Committee of Vice-Chancellors and Principals, Dr Shock, should have so openly broken with the conve polite restraint. For academics and even the auth discussion document, the Secretary of State for Educ Science, however, the most significant development i two weeks may be the volume of protest there has been House of Commons at the emptiness of the policy n public.

A large part of the trouble of the universities in during the past five years has come about because allowed themselves to lose their political friends, once strong on both sides of the political spectrum. If the o parties now do no more than recognize that the manage higher education in Britain has become a stick with whic the government, higher education cannot be confi benefiting.

But there is always a chance that the politicians will co come to recognize the social importance of higher ed which is the only long-term guarantor of well-being.

Calculations

Meanwhile, universities and others would do well to wa for a little-noticed appendix of the discussion document purports to be a first tentative attempt to calculate "perfo indicators" for the objective measurement of efficiency i education. The idea is that there should be constructed numbers measuring such characteristics of higher educa the cost of educating people in different kinds of insti or by means of a course of instruction, and culminatin attempt to quantify the social value of graduates in di fields.

To be fair, the government's document emphasizes th numbers tucked away in last month's appendix must be with several pinches of salt — but it then goes on to prom threaten) better numbers in the future. The snag, on the p showing, is that the fact that the numbers now published not satisfy the requirements of examiners of beginning-econ courses is unlikely to diminish the influence they will ha public policy.

The most obvious defect of the calculations now attemp that the average costs which are their chief product may be en misleading. It is not surprising that the average cost of educ students in British universities turns out to be higher, subje subject, than in polytechnics, or that a medical degree is expensive than one in engineering (which nevertheless is sh to be surprisingly higher than a science degree). But these num are irrelevant to the economic management of a system of hi education already in being, when the practical questions sh be whether this or that change in the pattern of an institu work would yield this or that benefit, and where the ful answers will be provided in terms of marginal, not aver costs.

All this has long since been recognized. In the present condi of British higher education, the first implication of a prop conducted study would probably be that there is too m educational plant which is under-used, or that the governm could at this juncture buy a great deal of higher education chea if it chose to follow that enlightened course.

Because there is every likelihood that the British governm will persist with its economic analysis, and that the results be used for a further shaping of the system as a whole, academ (and economists in particular) should do what they can to that the job is done properly and independently.